METHOD AND ASSEMBLY FOR DETECTING MULTI-DIMENSIONAL EYE MOVEMENTS AND A STAINING TINCTURE THEREFOR

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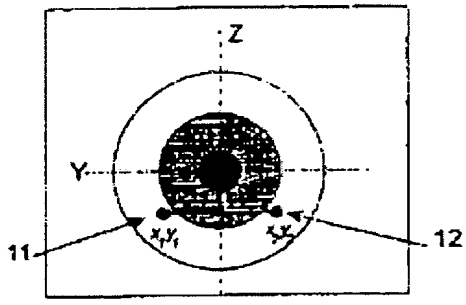
The invention relates to a method and an assembly for detecting multi-dimensional eye movements and a staining tincture therefor. The invention aims to improve a method and an assembly of the aforementioned type by allowing the measurement of horizontal, vertical and torsional movement components of the eye in the head, omitting the computationally intensive processing of grey values, with a high resolution and in real time, whilst providing an artificial staining tincture which can be washed out by lachrymal fluid without the additional use of water. According to the inventive method, the measured values are measured and processed in the following steps: a) application of at least two non-toxic tincture stains according to predetermined geometry to the conjunctiva of the eye outside the cornea, in order to produce a clear contrast marking under infra-red illumination; b) unique determination of the co-ordinates of a reference point of neutral rotation (centre of the pupil when looking straight ahead) as a reference position before commencing the measuring process; c) detection, conversion into digital form and saving of the image sequences, using the optoelectronic sensor d) conversion into binary form and division of each eye image into segments by separating the threshold values, based on the artificial contrast marking and determination of the co-ordinates of the stains in accordance with step b); assignment of the co-ordinates of the rotationally neutral reference point to the co-ordinates of the stains and drawing up of a surface over each segmented eye image; f) determination of the centroids of the stains applied at a distance from each other in accordance with step a) and determination of the deviation from the co-ordinates of the reconstructed reference point in accordance with step b) as a measurement for

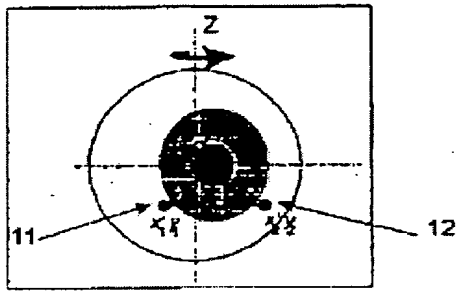
the horizontal, vertical and torsional position of the eye.

A



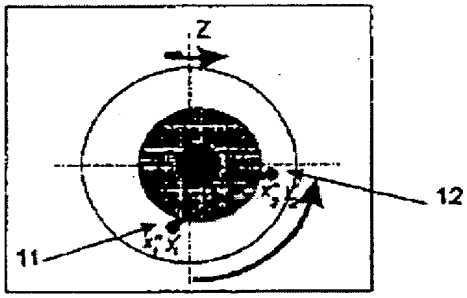
Referenzposition
REFERENCE POSITION

B



Horizontale Rotation
HORIZONTAL ROTATION

C



Horizontal + Torsionale Rotation
HORIZONTAL + TORSIONAL ROTATION
